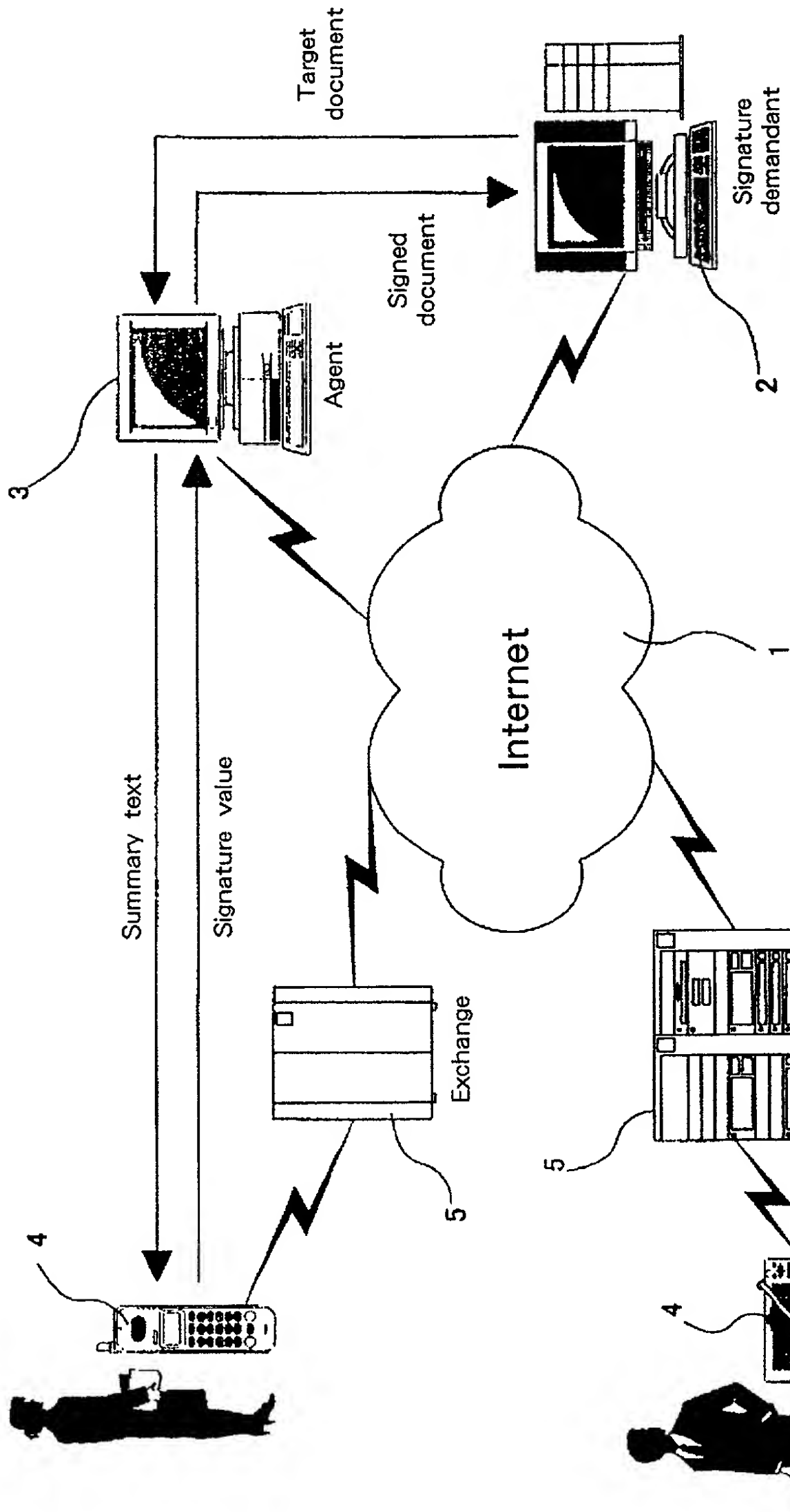
Target document
Signature demandant
Signed document
Agent
3
2
Internet
1
Summary text
Signature value
Exchange
5
ISP
5
4
Signatory
4

Fig. 1

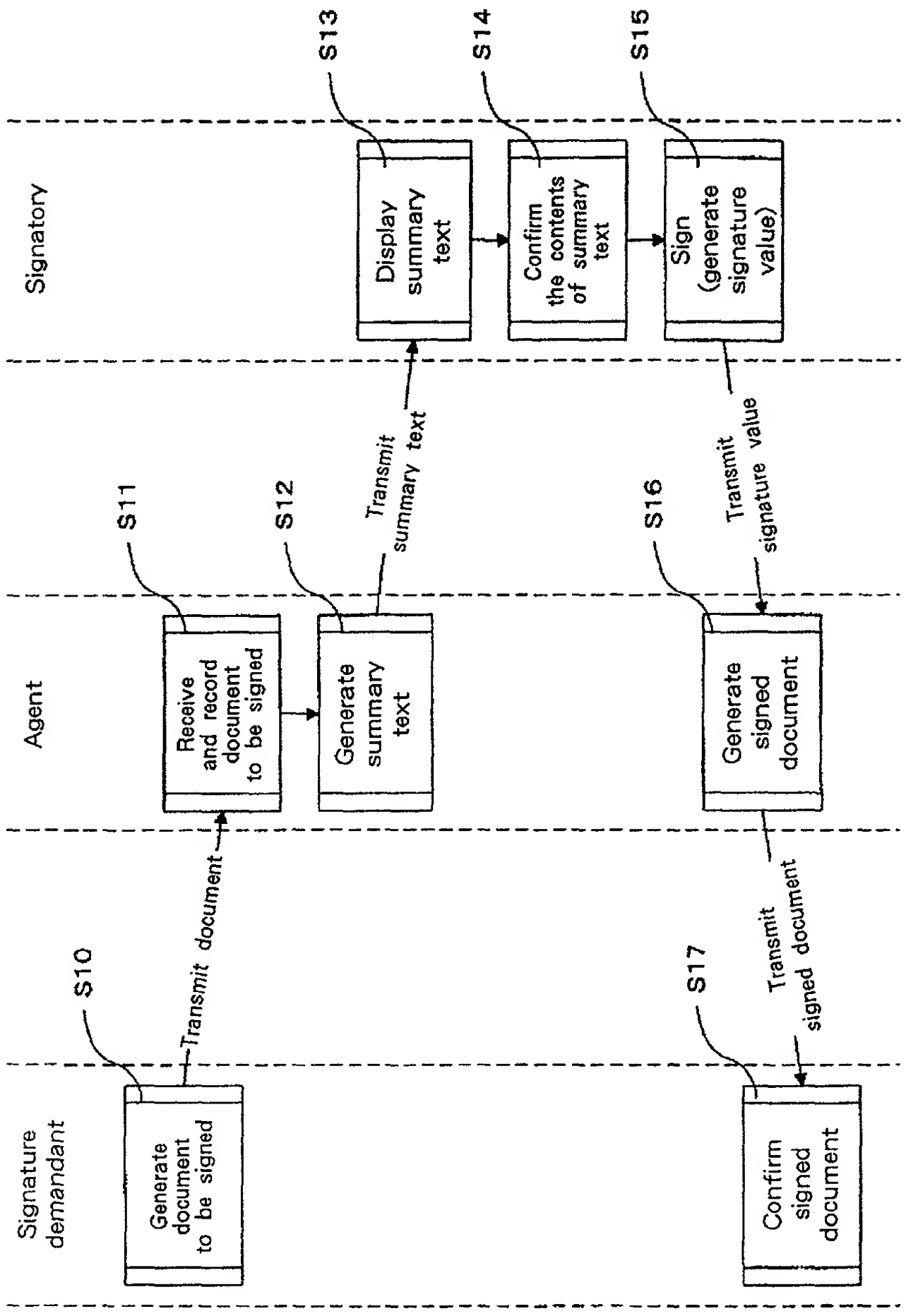
Signatory
Agent
Signature demandant
S10
S11
S12
S13
S14
S15
S16
S17
Generate document to be signed
Receive and record document to be signed
Generate summary text
Display summary text
Confirm the contents of summary text
Sign (generate signature value)
Generate signed document
Confirm signed document
Transmit summary text
Transmit signature value

Fig. 2

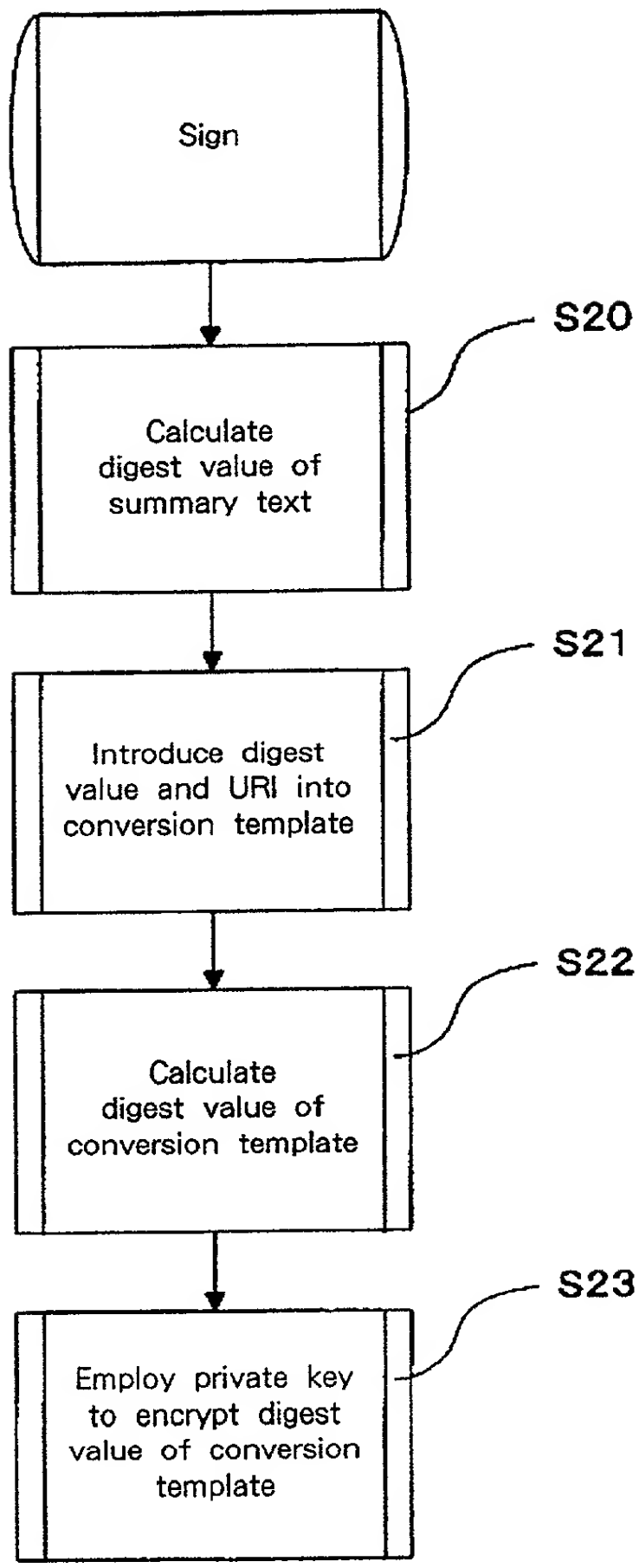
Sign
S20
Calculate digest value of summary text
S21
Introduce digest value and URI into conversion template
S22
Calculate digest value of conversion template
S23
Employ private key to encrypt digest value of conversion template

Fig. 3

```
1   <?xml version="1.0" encoding="UTF-8"?>
2   <Invoice>
3    <bookorder>
4     <item>
5      <title>XML and Java</title>
6      <ISBN>0201485435</ISBN>
7      <quantity>1</quantity>
8      <price>39.95</price>
9     </item>
10   </bookorder>
11   <payment>
12    <payTo>AAAAA.com, Inc.</payTo>
13    <billedTo>Hiroshi Maruyama</billedTo>
14    <amount unit="USD">39.95</amount>
15    <dueDate>Apr., 3, 2000</dueDate>
16    <paymentMethod>
17     <creditCard>
18      <cardType>MasterCard</cardType>
19      <cardHolderName>Hiroshi Maruyama</cardHolderName>
20      <expirationDate>04/2001</expirationDate>
21      <cardNumber>5283 8304 6232 0010</cardNumber>
22     </creditCard>
23    </paymentMethod>
24   </payment>
25  </Invoice>
```

Fig. 4

```
1   I, Hiroshi Maruyama, will pay 39.95 USD
2   to AAAAA.com, Inc. by Apr., 3, 2000
3   for the purchase of 1 QTY of book titled
4   XML and Java.
```

Fig. 5

```
1   <n1:SignedInfo xmlns:n1="http://www.w3.org/2000/01/xmldsig/">
2    <n1:CanonicalizationMethod xmlns:n1="http://www.w3.org/2000/01/xmldsig/"
3      Algorithm="http://www.w3.org/TR/1999/WD-xml-c14n-19991115"></n1:CanonicalizationMethod>
4    <n1:SignatureMethod xmlns:n1="http://www.w3.org/2000/01/xmldsig/"
5      Algorithm="http://www.w3.org/2000/01/xmldsig/dsa"></n1:SignatureMethod>
6    <n1:Reference xmlns:n1="http://www.w3.org/2000/01/xmldsig/"
7      URI="%document to be signed URI%">
8      <n1:Transforms xmlns:n1="http://www.w3.org/2000/01/xmldsig/">
9       <n1:Transform xmlns:n1="http://www.w3.org/2000/01/xmldsig/"
10        Algorithm="http://www.w3.org/TR/1999/PR-xpath-19991008">
11       concat("I, ", /Invoice/payment/billedTo, ", will pay ", /Invoice/payment/amount, " ",
12            /Invoice/payment/amount/@unit, " to ", /Invoice/payment/payTo, " by ",
13            /Invoice/payment/dueDate, " for the purchase of ".
14            /Invoice/bookorder/item/quantity, " QTY of book titled ".
15            /Invoice/bookorder/item/title, ".")
16      </n1:Transform>
17      <n1:Transform xmlns:n1="http://www.w3.org/2000/01/xmldsig/"
18        Algorithm="http://www.w3.org/TR/1999/WD-xml-c14n-19991115"></n1:Transform>
19     </n1:Transforms>
20     <n1:DigestMethod xmlns:n1="http://www.w3.org/2000/01/xmldsig/"
21        Algorithm="http://www.w3.org/2000/01/xmldsig/sha1"></n1:DigestMethod>
22     <n1:DigestValue xmlns:n1="http://www.w3.org/2000/01/xmldsig/"
23        Encoding="http://www.w3.org/2000/01/xmldsig/base64">
24       %digest value of the summary text %
25     </n1:DigestValue>
26    </n1:Reference>
27   </n1:SignedInfo>
```

Fig. 6

```
<?xml version="1.0" encoding="UTF-8"?>
<Signature xmlns="http://www.w3.org/2000/01/xmldsig/">
 <SignedInfo>
  <CanonicalizationMethod Algorithm="http://www.w3.org/TR/1999/WD-xml-c14n-19991115" />
  <SignatureMethod Algorithm="http://www.w3.org/2000/01/xmldsig/dsa" />
  <Reference URI="http://www.myagent.com/myorder/2000/0321.xml">
   <Transforms>
       <Transform Algorithm="http://www.w3.org/TR/1999/PR-xpath-19991008">
    concat("I, ", /Invoice/payment/billedTo, " will pay ", /Invoice/payment/amount, " ",
          /Invoice/payment/amount/@unit, " to ", /Invoice/payment/payTo, " by ",
          /Invoice/payment/dueDate, " for the purchase of ",
          /Invoice/bookorder/item/quantity, " QTY of book titled ",
          /Invoice/bookorder/item/title, ".")
       </Transform>
    <Transform Algorithm="http://www.w3.org/TR/1999/WD-xml-c14n-19991115" />
   </Transforms>
   <DigestMethod Algorithm="http://www.w3.org/2000/01/xmldsig/sha1" />
   <DigestValue Encoding="http://www.w3.org/2000/01/xmldsig/base64">
    KnkofqqssCINlew59DrhE6Hnrpk=
   </DigestValue>
  </Reference>
 </SignedInfo>
 <SignatureValue>
  MCwCFBvOeJygByRVVHjM0YJ47qfkoDITAhRr6u90oIGcXrKz0uNIRJiQTYGRhw==
 </SignatureValue>
 <KeyInfo>
  <X509Data>
   <X509Name>CN=Hiroshi Maruyama, OU=TRL, O=IBM, C=JP</X509Name>
   <X509Certificate>
MIICvTCCAnsCBDhZhc4wCwYHKoZIzjgEAwUAMEQxCzAJBgNVBAYTAkpQMQwwCgYDVQQKEwNJQk
0xDDAKBgNVBAsTA1RSTDEZMBcGA1UEAxMQSGlyb3NoaSBNYXJ1eWFtYTAeFw05OTEyMTcwMDM3
MzRaFw0wMDAzMTYwMDM3MzRaMEQxCzAJBgNVBAYTAkpQMQwwCgYDVQQKEwNJQk0xDDAKBgN
VBAsTA1RSTDEZMBcGA1UEAxMQSGlyb3NoaSBNYXJ1eWFtYTCCAbgwggEsBgcqhkjOOAQBMIIBHwK
BgQD9f1OBHXUSKVLfSpwu7OTn9hG3UjzvRADDHj+AtlEmaUVdQCJR+1k9jVj6v8X1ujD2y5tVbNeBO4A
dNG/yZmC3a5lQpaSfn+gEexAiwk+7qdf+t8Yb+DtX58aophUPBPuD9tPFHsMCNVQTWhaRMvZ1864rYdcq
7/IiAxmd0UgBxwIVAJdgUI8VIwvMspK5gqLrhAvwWBz1AoGBAPfhoIXWmz3ey7yrXDa4V7I5IK+7+jrqgvIXT
As9B4JnUVIXjrrUWU/mcQcQgYC0SRZxl+hMKBYTt88JMozIpuE8FnqLVHyNKOCjrh4rs6Z1kW6jfwv6ITVi
8ftiegEkO8yk8b6oUZCJqlPf4VrlnwaSi2ZegHtVJWQBTDv+z0kqA4GFAAKBgQCE12KsJ2zPP0F+VuR4xGI
Q23ogU47HmOY4TEGrUCuYE9xjqo+Oh/7PtnKj/9+OmSNH1HDiY4GYh3KnjfwB7+2BmAwVLB0kkYZwdc
zb5aok7pj7UQIiRgOp2b/08Fq4ZBDA483SrVwiCvuT3STGQykEyPw4wkXgjpwGb+NDfKUqCzALBgcqhkjO
OAQDBQADLwAwLAIUZeGr8xv9/LwgNBFbr9IkSq2wy5QCFHJOnTNGgisZOI61+O2ycivp0XHE
   </X509Certificate>
  </X509Data>
 </KeyInfo>
</Signature>
```

Fig. 7